RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole 41-11-08

Log Event A

Borehole Information

Farm : SX **Tank :** SX-111 **Site Number :** 299-W23-94
N-Coord : 35,217 **W-Coord :** 75,805 **TOC Elevation :** 662.22
Water Level, ft : **Date Drilled :** 3/9/1962

Casing Record

Type : Steel-welded **Thickness :** 0.313 **ID, in. :** 8
Top Depth, ft. : 0 **Bottom Depth, ft. :** 135

Equipment Information

Logging System : 2 **Detector Type :** HPGe **Detector Efficiency:** 35.0 %
Calibration Date : 03/1995 **Calibration Reference :** GJPO-HAN-1

Logging Information

Log Run Number :	1	**Log Run Date :**	7/5/1995	**Logging Engineer:**	Mike Widdop
Start Depth, ft.:	0.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	15.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	2	**Log Run Date :**	7/6/1995	**Logging Engineer:**	Steve Kos
Start Depth, ft.:	13.5	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	105.5	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	3	**Log Run Date :**	7/7/1995	**Logging Engineer:**	Steve Kos
Start Depth, ft.:	104.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	134.5	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

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Analysis Information

Analyst : D.C. Stromswold

Data Processing Reference : Data Analysis Manual Ver. 1 Analysis Date : 11/14/1995

Analysis Notes :

Borehole 41-11-08 was logged in three runs in a move-stop-acquire mode that collected spectra for 100 seconds every 0.5 ft. Repeatability in the overlap sections was within the statistical uncertainty limits of the measurements. Gain drifts during the third run made it necessary to process the data in two segments with different energy calibrations, whereas the first and second runs each required only one energy calibration.

Verification spectra collected before and after the run showed that the tool was operating correctly. The verification spectrum obtained before the second run had slightly poorer energy resolution than normal, perhaps caused by detector or electronics temperature changes that morning. The poorer resolution did not affect the identification of radionuclides.

Correction factors for 0.33-in.-thick steel casing were used during data processing.

Cs-137 was the only man-made radionuclide identified in this borehole, occurring intermittently from the surface to about 19 ft and at 72 ft. The measured concentrations were less than 1 pCi/g, except at the surface.

The K, U, and Th logs indicate several possible lithology changes over the interval from 62 to 73 ft.

For additional log data interpretation, see the discussion for this borehole included in the Tank Summary Data Report for SX-111.

Log Plot Notes:

Three log plots are provided. The first one shows Cs-137 concentrations. The second one shows the naturally occurring radionuclides (K-40, U-238, and Th-232), which can be used for lithology interpretations. A combination plot includes logs of Cs-137, natural gamma, total gamma derived from the spectral data, and the latest available data from WHC Tank Farms gross gamma logging. The headings of the Cs-137 and natural gamma plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detectable activity (MDA). The MDA of a radionuclide represents the lowest concentraton at which positive identification of a gamma-ray peak is statistically defensible. If the reported concentration is slightly above the MDA, the 95-percent confidence interval may extend below the MDA value and detection is not assured with 95-percent certainty.

The Tank Farms gross gamma plot is the latest available from WHC. No attempt has been made to adjust the plot for depth discrepancies.